

CLAIMS

1. Process for reducing the aldehyde concentration in a mixture comprising cyclohexanone and one or more aldehydes, said process comprising distilling  
5 said mixture in a distillation column in the presence of an alkaline compound, wherein in the bottom of the distillation column substantially no water is present.
2. Process according to claim 1, wherein in the bottom of the distillation column less than 100 weight ppm of water is present.
- 10 3. Process according to claim 1 or 2, wherein said mixture is a mixture comprising cyclohexanone, cyclohexanol, low boiling compounds and high boiling compounds and wherein said distilling involves separation of low boiling compounds to obtain a top product comprising low boiling compounds and a bottom product comprising cyclohexanone, cyclohexanol and high  
15 boiling compounds.
4. Process according to any one of claim 1 to 3, wherein the aldehydes are hexanal and/or pentanal.
5. Process according to claim 3 or 4, wherein the distillation is effected at a top temperature of between 45 and 130 °C and a bottom temperature of between  
20 105 and 190 °C.
6. Process according to any one of claim 1 to 5, wherein the process comprises feeding a solution comprising water and the alkaline compound to the distillation column at a level above the bottom of the distillation column.
7. Process according to any one of claim 1 to 6, wherein the process comprises  
25 feeding the mixture to said distillation column and feeding a solution comprising water and the alkaline compound to the distillation column at a level above the bottom of the distillation column.
8. Process according to any one of claim 1 to 6, wherein the process comprises feeding the mixture to the distillation column at a level above the bottom of the  
30 distillation column and introducing a solution comprising water and the alkaline compound into the mixture prior to said feeding.
9. Process according to any one of claim 1 to 8, wherein the alkaline compound is an alkali metal compound.
10. Process according to claim 9, wherein distilling the mixture is effected with  
35 such an amount of alkali metal compound that the concentration of alkali metal

in the bottom of the distillation column is higher than 2 weight ppm and lower than 50 weight ppm.

- 5 11. Process according to any one of claim 1 to 10, wherein said alkaline compound is an alkali metal hydroxide, alkali metal carbonate or alkali metal alkoxide.
12. Process according to any one of claim 1 to 11, wherein said alkaline compound is sodium hydroxide or potassium hydroxide.
- 10 13. Process according to any one of claim 2 to 12, wherein the process further comprises feeding said bottom product to a distillation column in which cyclohexanone is distilled off as a top product.
- 15 14. Process according to any one of claim 1 to 13, wherein preparing of the mixture involves oxidizing cyclohexane in the liquid phase with an oxygen containing gas in the absence of an oxidation catalyst resulting in an oxidation mixture comprising cyclohexane, cyclohexyl hydroperoxide, cyclohexanone and cyclohexanol; treating the oxidation mixture with a cyclohexyl hydroperoxide decomposing metal salt in the presence of an alkali metal hydroxide such as to effect decomposition of the cyclohexyl hydroperoxide into cyclohexanone and cyclohexanol to obtain the mixture subjected to said distilling in the presence of an alkaline compound.
- 20 15. Process according to claim 14, wherein said preparing of the mixture further involves separating cyclohexane prior to said distilling.
- 25 16. Process according to any one of claims 1-15, wherein the process comprising oxidizing cyclohexane in the liquid phase with an oxygen containing gas resulting in an oxidation mixture comprising cyclohexane, cyclohexyl hydroperoxide, cyclohexanone and cyclohexanol; treating the oxidation mixture with a cyclohexyl hydroperoxide decomposing metal salt in the presence of an alkali metal hydroxide such as to effect decomposition of the cyclohexyl hydroperoxide into cyclohexanone and cyclohexanol, resulting in a mixture comprising cyclohexanone, cyclohexanol and cyclohexane;
- 30 separating, by distillation, cyclohexane from the mixture comprising comprising cyclohexanone, cyclohexanol and cyclohexane;
- 35 separating, by distillation, low boiling compounds from the resulting mixture to obtain a top product comprising low boiling compounds and a bottom product comprising cyclohexanone, cyclohexanol and high boiling compounds;

wherein the distillation to separate cyclohexane or the distillation to separate low boiling compounds is carried out according to any one of claims 1 to 15.

17. Process according to claim 16, wherein the process further comprises feeding said bottom product to a distillation column in which cyclohexanone is distilled off as a top product.